

Mid Year Review

Name _____

Date _____ Class _____

1. What is the value of $(3^4)^3$?
 - a. 36
 - b. 1,728
 - c. 2,187
 - d. 531,441

2. When the planet Mercury is farthest from the Earth, it is 137,900,000 miles away. What is this number in scientific notation?
 - a. 1.379×10^5
 - b. 1.379×10^6
 - c. 1.379×10^7
 - d. 1.379×10^8

3. One microsecond equals 1×10^{-6} second. What is the standard notation, in seconds, for 200 microseconds?
 - a. 0.0002
 - b. 0.002
 - c. 0.02
 - d. 200,000,000

4. What is $\sqrt{196}$?
 - a. 14
 - b. 94
 - c. 98
 - d. 38,416

5. What is/are the square root(s) of 36?
 - a. 6 only
 - b. -6 and 6
 - c. -18 and 18
 - d. -1,296 and 1,296

6. Simplify: $\sqrt{96}$
 - a. $4\sqrt{6}$
 - b. $8\sqrt{6}$
 - c. $16\sqrt{6}$
 - d. $48\sqrt{2}$

7. A square field has an area of 900 square meters. What is the length of one side of the field?
 - a. 30 meters
 - b. 90 meters
 - c. 225 meters
 - d. 450 meters

8. $\sqrt{256} =$ _____
 - a. -512
 - b. 16
 - c. 256
 - d. 512

9. Which number is rational?
 - a. π
 - b. $\sqrt{50}$
 - c. $-\sqrt{144}$
 - d. $3\sqrt{5}$

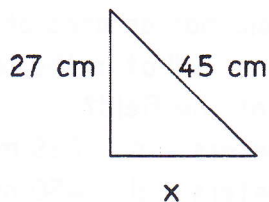
10. $\sqrt{45} + \sqrt{80} =$ _____
 - a. $5\sqrt{5}$
 - b. $7\sqrt{5}$
 - c. $7\sqrt{10}$
 - d. $12\sqrt{5}$

11. Which number is irrational?
 - a. $\sqrt{81}$
 - b. $-\sqrt{36}$
 - c. $2.\bar{6}$
 - d. $\sqrt{30}$

12. What is the best whole-number ESTIMATE of $\sqrt{77}$?
 - a. 7
 - b. 8
 - c. 9
 - d. 10

13. Find the quotient: $\frac{\sqrt{45}}{\sqrt{81}}$
 - a. $\frac{\sqrt{5}}{9}$
 - b. $\frac{\sqrt{5}}{3}$
 - c. $3\sqrt{5}$
 - d. $9\sqrt{5}$

14. What is x in this rt triangle?



- a. 18 cm c. 24 cm
b. 20 cm d. 36 cm
15. A rectangular park measures 30 meters by 40 meters. How long will a diagonal path from one corner of the park to the other corner measure?
- a. 10 m c. 50 m
b. 26.5 m d. 70 m

16. What is the length of the third side of this triangle?
- 16 cm



- a. 4 cm c. 20 cm
b. 14 cm d. 28 cm
17. Solve the following equation.
 $9n + 7 = 61$
- a. 5 c. 7
b. 6 d. 8

18. Which mathematical expression models this word expression?

eight times the difference of a number and 3

- a. $8n - 3$ c. $3(8 - n)$
b. $3 - 8n$ d. $8(n - 3)$

19. A right triangle has sides measuring 6 units, 8 units, and 10 units. Which of the following shows the Pythagorean relationship of the areas of the squares drawn along each side?

- a. $12 + 16 = 28$
b. $18 + 24 = 42$
c. $24 + 76 = 100$
d. $36 + 64 = 100$

20. An elevator can hold no more than 2,000 pounds. If a 375-pound package is placed on the elevator, what is the GREATEST number of people, averaging 150 pounds each, that can safely get into the elevator?

- a. 8 c. 10
b. 9 d. 11

21. Solve this equation for y .
 $-4x + 2y = 10$

- a. $y = 2x + 5$
b. $y = -2x - 5$
c. $y = 2x - 5$
d. $y = -2x + 5$

22. Choose the correct solution for x in this equation.

$$|x + 3| = 12$$

- a. 9 and 15
b. -9 and -15
c. -9 and 15
d. 9 and -15

23. Solve. $2x - 14 < 20$

- a. $x < -17$ c. $x < 3$
b. $x < -3$ d. $x < 17$

24. Which expression is NOT equal to 1?

- a. $(-17)^0$ c. $(-1)^5$
b. $7^4 \div 7^4$ d. 1^{-1}

25. Which value of x will make the expression $\sqrt{(2x+5)}$ an irrational number?

- a. 10 c. 36
b. 22 d. 38

26. Tim tosses three nickels on the ground. What is the probability that all three will show "heads"?

- a. $\frac{1}{8}$ c. $\frac{1}{2}$
b. $\frac{3}{8}$ d. $\frac{8}{27}$

27. $\sqrt{6}$ is between

- a. 5 and 6 c. 4 and 5
b. 2 and 3 d. 3 and 4

28. A box contains spools of thread: 3 spools of red, 4 spools of blue, 2 spools of green, and 3 spools of yellow. What is the probability of reaching in the box without looking and picking a red spool?

- a. $\frac{1}{4}$ c. $\frac{1}{5}$
b. $\frac{1}{5}$ d. $\frac{3}{4}$

29. Which expression is NOT equal to 12^6 ?

- a. $12^7 \div 12$ c. $(12^2)^3$
b. $4^3 \cdot 3^3$ d. $12^5 \cdot 12$

30. What is $4^{(n-4)}$ when $n=1$?

- a. -64 c. 64
b. $-\frac{1}{64}$ d. $\frac{1}{64}$

31. Solve $-6 - x \geq 7$

- a. $x \geq -13$ c. $x \leq -13$
b. $x \leq 13$ d. $x \geq 13$

32. Solve. $1 + 3x - 9 = 4x - 7$

- a. -15 c. -1
b. $-\frac{15}{7}$ d. $-\frac{7}{15}$

33. Simplify: $\frac{(3a^2)^3}{a^3}$

- a. $27a^3$ c. $9a^3$
b. $\frac{9a^6}{a^3}$ d. $\frac{3a^6}{a^3}$

34. Simplify: $(5-2)^2 - 4 - 2 \times 6$

- a. 5 c. -7
b. 18 d. 90

35. Multiply: $(2x^2y)(3xy^3)(-4x^3y^2)$

- a. $-24x^6y^6$ c. $-24x^{27}y^{16}$
b. $-24x^8y^9$ d. $24x^6y^7$

36. Simplify: $|-10| - (-5)^2$

- a. -15 c. 5
b. 0 d. 20

37. Simplify: $\sqrt{4^3} - (-2)^3$

- a. 16 c. 56
b. 8 d. 0

38. Which of the following relations is a function?
- $\{(0,-1)(1,-1)(0,-2)\}$
 - $\{(-1,1)(-1,-1)(0,0)\}$
 - $\{(2,1)(1,0)(0,-1)\}$
 - $\{(-1,1)(-1,0)(-1,-1)\}$

39. Which of the following statements is false?
- $\{t,o\} \subseteq \{\text{letters in the word "today"}\}$
 - $8 \notin \{0,2,4,6,8\}$
 - $\emptyset = \{ \}$
 - $\{a,b,c\} \cap \{b,c,d,e\} = \{b,c\}$

40. Solve for x: $\frac{6x - 40}{2} = 4$
- 6
 - $\frac{32}{6}$
 - 8
 - $7\frac{1}{3}$

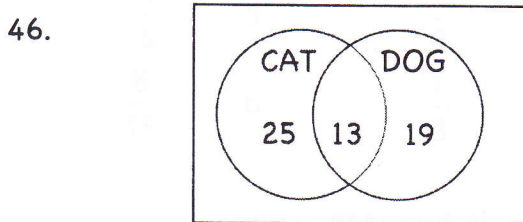
41. $7(2x + 6) - 4(9x + 6) < -26$
- $x > -2$
 - $x < -2$
 - $x > 2$
 - $x < -1$

42. Which equation is NOT a linear function?
- $y = \frac{1}{4}x + 2$
 - $y = -x^2$
 - $x + 2y = -4$
 - $y = -8$

43. What is $\{1,2,3,4,5\} \cap \{2,4,6,8,10\}$?
- $\{1,2,3,4,5,6,8,10\}$
 - $\{2,4\}$
 - $\{1,2,3,4,5\}$
 - $\{1,3,5,6,8,10\}$

44. Alice has 3 hats, 5 blouses, and 4 skirts. How many different outfits could she make?
- 120
 - 60
 - 24
 - 12

45. A deck of cards contains 30 red cards and 10 black cards. Sonia picks one card and then picks a second card with replacement the first one. What is the probability that Sonia will pick two red cards?
- $\frac{3}{8}$
 - $\frac{3}{4}$
 - $\frac{3}{16}$
 - $\frac{9}{16}$



One hundred people were asked if they had a cat or a dog. The Venn diagram shows the results of the survey.

How many of those surveyed have neither a cat nor a dog?

- 13
- 43
- 57
- 44